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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/599,269	06/22/2000	Stephen W. Rose	OF-102US	8360

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EXAMINER
OCAMPO, MARIANNE S

ART UNIT	PAPER NUMBER
1723	9

DATE MAILED: 02/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/599,269	ROSE ET AL.	
	Examiner	Art Unit	
	Marianne S. Ocampo	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 16 and 26 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 15 and 25. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 – 2, 4 – 13, 18, 20, 22 – 23 and 28 - 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shane (US 6,143,106) in view of Marshall et al. (WO 98/07905).

4. With respect to claim 1, Shane discloses a pleated filter cartridge for removing particulates from a liquid, the cartridge including a perforate core (33), a pair of end caps (16, 17), and an annular non-woven filter element (12) around the core (33) formed by substantially axially-parallel pleats of at least one sheet of filter material, the filter element having opposite ends each in sealing engagement with one of the end caps, and the filter material being a non-perforated non-woven material, as in fig. 1 and col. 4. Shane fails to disclose the filter material forming the element (12) being a non-perforated non-woven material of flash-spun plexifilamentary high-density polyethylene fibrils having a pressure drop of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 98% of 1 – 2 micron particulates at a pressure differential of 30 psid. Marshall et al. teach a filter material formed of a non-perforated non-woven material of flash-spun plexifilamentary high-density polyethylene fibrils having a pressure drop of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 98% of 1 – 2 micron particulates at a pressure differential of 30 psid, 98% of 1 – 2 micron particulates at a pressure differential of 30 psid, as in abstract and specification pages 3, 6 – 7, 9, 13 and 27. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the (filter) material of construction of the filter element of the pleated filter cartridge of Shane, in lieu of the filter material taught by Marshall et al. in order to provide an improved filter material having desirable qualities for filtration applications, such as strength and improved permeability and filter life than other filtration materials (see page 9).

5. With regards to claim 2, Shane also fails to disclose the filter material having a pressure of less than about 1.5 psid at a flow rate of 10 gal/hr and a filtration efficiency of of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 99% of 1 – 2 micron particulates at a pressure differential of 30 psid. Marshall et al. further teach the filter material having a pressure of less than about 1.5 psid at a flow rate of 10 gal/hr and a filtration efficiency of of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 99% of 1 – 2 micron particulates at a pressure differential of 30 psid, as in examples 30 – 31 in page 27 of the specification. The same motivation applied previously in the above paragraph, is applied here. Here it is considered that a more efficient and improved filter material for the pleated cartridge of Shane would be the result by combining the teachings of Marshall et al., thereby allowing the trapping or removal of even greater amount of particulates in the micronic range, particularly in 1 – 2 micron sizes.

6. With respect to claim 4, Shane fails to disclose the filter material having a Gurley Hill porosity rating no greater than about 5 sec/100cc. Marshall et al. also teach the filter material used in the (same as above) examples 30 – 31, having a Gurley Hill porosity rating no greater than about 5 sec/100cc, as in page 27. The same motivations applied previously in the above paragraphs, is applied here.

7. Concerning claim 5, Shane discloses the filter material (12, 23) of the pleated cartridge having a thickness in the range of about 0.005 in. (0.127 mm) to about 0.25 in (0.635 mm), which include some thickness values less than about 0.15 mm (those about 0.005 in or 0.127 mm to about 0.15 mm), as in col. 5.

8. With regards to claim 6, Shane also discloses the filter material having a thickness in the range of about 0.127 mm (0.005 in) to about 0.635 mm, which include some values less than or equal to about 0.13 mm (i,e. the value of 0.127 mm), as in col. 5.

9. Regarding claim 7, Shane fails to disclose the filter material having a basis weight of less than about $45g/m^2$. Marshall et al. also teach the filter material in examples 30 – 31 having a basis weight of less than about $45g/m^2$, as in page 27. The same motivations applied previously in the above paragraphs 3 - 4, are applied here.

10. Concerning claim 8, Shane discloses the filter material (12, 23) of the pleated cartridge having a thickness in the range of about 0.005 in. (0.127 mm) to about 0.25 in (0.635 mm), which include some thickness values less than about 0.15 mm (those about 0.005 in or 0.127 mm to about 0.15 mm), as in col. 5.

11. With regards to claim 9, Shane also discloses the filter material having a thickness in the range of about 0.127 mm (0.005 in) to about 0.635 mm, which include some values less than or equal to about 0.13 mm (i,e. the value of 0.127 mm), as in col. 5.

12. Regarding claim 10, Shane discloses the filter element (12) having at least two layers (multi-layered), including a mesh (support) layer (22 or 24) with the filter material (23), as in fig 2 and col. 4.

13. With regards to claim 11, Shane discloses the mesh layer (22) being between the filter layer (23) and the core (33), as in fig. 2.

14. Concerning claim 12, Shane further discloses, in another embodiment, the filter material (23) may be a single layer serving as the sole filtering layer, as in col. 5, lines 23 - 26.

15. With respect to claim 13, Shane also discloses the layers of the pleated filter element (12), including that of the mesh layer (22), may be formed of polyethylene, which inherently can include all or any type of polyethylene material, including those of low-density polyethylene, as in col. 4.

16. Regarding claims 18 and 20, Shane further discloses a containment sleeve (14 or 24) of polyethylene netting (thermoplastic synthetic polymeric mesh such as that of polyethylene)

enclosing or surrounding the annular filter element (12, which includes layers 23 & 22, and core 33), as in fig. 2 and cols. 4 – 5.

17. Concerning claim 22, Shane further discloses, in another embodiment, the filter material (23) may be a single layer serving as the sole filtering layer, as in col. 5, lines 23 - 26.

18. With regards to claim 23, Shane discloses an annular pleated filtering element (12) for removing particulates from a liquid formed by substantially parallel pleats of at least one sheet of filter material (23) and a mesh layer (22 or 24) formed of (low-density) polyethylene, wherein the filter material is a non-perforated non-woven material, as in cols. 4 – 5 and figs. 1 – 2. Shane fails to disclose the filter material forming the element (12) being a non-perforated non-woven material of flash-spun plexifilamentary high-density polyethylene fibrils having a pressure drop of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 98% of 1 – 2 micron particulates at a pressure differential of 30 psid. Marshall et al. teach a filter material formed of a non-perforated non-woven material of flash-spun plexifilamentary high-density polyethylene fibrils having a pressure drop of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 98% of 1 – 2 micron particulates at a pressure differential of 30 psid, 98% of 1 – 2 micron particulates at a pressure differential of 30 psid, as in abstract and specification pages 3, 6 – 7, 9, 13 and 27. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the (filter) material of construction of the filter element of the pleated

filter cartridge of Shane, in lieu of the filter material taught by Marshall et al. in order to provide an improved filter material having desirable qualities for filtration applications, such as strength and improved permeability and filter life than other filtration materials (see page 9).

19. Regarding claim 28, Shane discloses the filter material (12, 23) of the pleated cartridge having a thickness in the range of about 0.005 in. (0.127 mm) to about 0.25 in (0.635 mm), which include some thickness values less than about 0.15 mm (those about 0.005 in or 0.127 mm to about 0.15 mm), as in col. 5.

20. With regards to claim 29, Shane also discloses the filter material having a thickness in the range of about 0.127 mm (0.005 in) to about 0.635 mm, which include some values less than or equal to about 0.13 mm (i,e. the value of 0.127 mm), as in col. 5.

21. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shane and Marshall et al.

22. With respect to claims 19 and 21, although Shane did not explicitly disclose the rigid plastic material that forms the core (33) and the end caps (16, 17) being that of polyethylene, it is considered obvious to one of ordinary skill in the art to modify the material of construction of the core and end caps from any rigid plastic to specifically polyethylene, which is a known type of rigid plastic material. See the case law, ***In re Leshin***, 227 F.2d 197, 125 USPQ 416 (CCPA

1960), which established a prima facie case of obviousness in that "*selection of a known plastic* (polyethylene) *to make a container* or product (in this instance, a product is/are the rigid plastic core and end caps) *of a type made of plastics prior to the invention was held obvious*".

23. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shane and Marshall et al., as applied to claim 1 above, and further in view of the prior art TYVEK product pamphlet/brochure by Dupont "The Medium That Fits a Wide Variety of Filtration Needs".

24. Regarding claim 3, Shane fails to disclose the mean flow pore size of the filter material being greater than 4 microns while its nominal pore size filtration rating is 1 micron. Marshall et al. also teach the mean flow pore size of 5.935 microns, as in example 31, as in page 27. Shane, as modified by Marshall et al., fail the nominal pore size filtration rating is 1 micron. The TYVEK product pamphlet/brochure by Dupont teaches a filter material called TYVEK, which is similar to the filter material of Marshall et al., formed of the same filter material and also having the same properties of the filter material of Marshall et al., but also having a nominal pore size filtration rating is 1 micron, as in page 2. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter material of Shane, as modified by Marshall et al, in lieu of the filter material taught by Dupont TYVEK product brochure, in order to provide an alternative but as effective and efficient filter material forming the filter element of the pleated filter of Shane.

25. Claims 14 – 17 and 24 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shane and Marshall et al., as applied to claim 1 above, and further in view of Miller et al. (US 5,252,207).

26. With respect to claims 14 and 24, although Shane as modified by Marshall et al., fails to disclose to disclose the polyethylene mesh having a softening temp.range lower than the lower end of the softening temp. range of the high density polyethylene filter material and is tack-point interconnected to the filter material without having compromised the filter material, it is considered known in the art that low density polyethylenes (LDPEs) have lower melting points than high-density polyethylenes (HDPEs), and from this, it is obvious that the mesh formed of LDPEs would have a softening temperature range lower than the lower end of the softening temp. range of HDPE filter material. Miller et al. teach a similar pleated filter cartridge comprising a perforated core (11), a pair of end caps (12, 13) and an annular non-woven filter element (20) around the core (11) formed by substantially axially-parallel pleats of at least one sheet of filter material (23) and the filter element having opposite ends each in sealing engagement with one of the end caps (12, 13), wherein the filter element could be formed of a non-woven, synthetic polymer such as HDPE (high-density polyethylene), and further having a polymeric (which includes polyethylenes) mesh layer (70, 71) which provides support to the filter material, and the mesh layer (70) is tack-point interconnected (i.e. "fusion-bonded) to the filter material (23) without having compromised the filter material (i.e. without damaging the structure of the filter or the filter material itself), as in fig. 9 and col. 12. It is considered obvious

to one of ordinary skill in the art at the time of the invention to modify the filter cartridge of Shane as modified by Marshall et al., by adding the embodiment taught by Miller et al, in order to provide an improved pleated filter cartridge having the means to provide sufficient reinforcement which would prevent collapse of individual pleats during filtration or any pressure changes in the filter cartridge.

27. Concerning claims 15 – 16 and 25 - 26, Shane as modified by Marshall et al. and Miller et al., fail to teach the polyethylene mesh layer and the filter material being tack-point connected prior to pleating. Here, claim 15 is considered an example of a product by process claim. The patentability of the product by process claim is based upon the product itself, eventhough the claim is limited and defined by process, and therefore, the product in such a claim is unpatentable if it is the same as, or obvious from the product of the prior art, even if the product of the prior art had been made by a different process. *See **In re Thorpe**, et al., No. 85-1913 (11-21-85) 227 USPQ pages 964 – 966.* In this instance, the product of Shane, as modified by the Marshall et al and Miller et al, is considered the same, if not an obvious modification of the product of the claimed invention, since it meets all the structural limitations of the claimed invention/product (pleated filter cartridge) except for the process step of tack-point interconnecting of the mesh layer and the filter material prior to pleating.

28. Regarding claims 17 and 27, Shane as modified by Marshall et al. and Miller et al, fails to disclose the softening temperature range of the mesh layer being within the range of

about 170 – 195° F. It is considered an inherent property of the LDPE used to form the mesh layer to have a softening temperature range below its melting point (which is known in the art to be around 200° F but below its melting point of 240° F), that is below 200° F, which include those values within the range of about 170 – 195 ° F.

Response to Amendment

29. Applicant's arguments and declaration of Dr. Mayer, filed with the response on 11-28-01 with respect to claims 1 - 29 have been considered but are moot in view of the new grounds of rejection presented above. This action is non-final.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 3,716,436 (Pall et al.), 4,075,106 (Yamazaki), 3,306,794 (Humber Jr.), 3,752,321 (McLaren), 6,034,008 (Lim et al.) and WO 01/29295A1 (Marin et al.).

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo whose telephone number is (703) 305-1039. The examiner can normally be reached on Mondays to Fridays from 8:00 A.M. to 4:30 P.M..

32. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

33. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

M.S.O.
February 8, 2002

M. Savage
MATTHEW O. SAVAGE
PRIMARY EXAMINER